SECTION G: Inspection and Evaluation

Appendix

SECTION G: INSPECTION AND EVALUATION

Inspection Result: A Rating

The outcome of the compliance inspection is a record of the system's condition, a rating of either **in compliance** ("acceptable") or **not in compliance ("not acceptable").**

The acceptable rating documents that the existing system is not failing and is not an imminent threat to public health. It does not address the life expectancy of the system or the meeting of all standards set by state or local codes. More comprehensive inspections are often done, but these are not compliance inspections.

A system is considered in compliance if:

- **it is not an imminent threat to public health,**
- **it is not failing to treat wastewater, and**
- **it meets performance expectations of any applicable monitoring plan.**

Determining whether or not a system is failing requires you to know when it was constructed and what kind of establishment it serves.

If the system is a performance system, the site must be inspected as a standard system would be to insure proper operation, and the operating permit for the system should also be evaluated.

The unacceptable rating is the bad news, and many systems fall into this category. Some systems are not compliant in such a way that they present an **imminent public health threat,** while many systems are unacceptable, or **failing to treat wastewater,** for other reasons.

Imminent Threat to Public Health or Safety

The most serious failures are imminent threats to public health.

These systems are a direct threat to public health, including the health of the systems' owners, primarily because they may be contaminating public drinking water supplies, and they should be brought into compliance, or "updated," quickly. The grace period may be set by local units of government. In many areas these systems are identified as a "nuisance" condition, and then must be dealt with in less than ten days. Many local units of government require pumping to remove the sewage and then require replacement of the system within ten months. The proper method for updating each problem will be site-specific.

Failing To Treat Wastewater

At a minimum, the compliance inspection must identify if the system is failing, even if it does not present an imminent threat to public health.

Onsite systems should be considered failing if they do not or may not fully treat sewage before it enters the groundwater. Failure to treat sewage adequately can cause serious problems in surface waters and groundwater, including our valuable sources of drinking water. These water resources must be protected.

Not all failures are visible as sewage flowing into ditches or streams. Failure of a tank, or failure to maintain the tank, may also lead to early failure of the soil treatment system. If an onsite system has a cesspool, seepage pit, leaching pit or drywell, untreated sewage is likely to be entering groundwater, and such a system is considered to be failing. Similarly, if the soil treatment portion of the onsite system is sited so that there is insufficient separation of the system from saturated soil or bedrock, untreated sewage is likely to be entering the groundwater.

Cesspool, Seepage Pit, Leaching Pit, Drywell

Cesspools and seepage pits are defined as unacceptable because they were not designed or constructed to treat waste, only to dispose of it. Treatment of sewage requires oxygen, unsaturated flow, and adequate distance from groundwater. Typically, cesspools were not constructed to fulfill these criteria.

Limiting Layer

Three feet of separation from a limiting layer such as groundwater or bedrock allows for the waste-treatment performance of soil. In many different sites and soils, three feet is still sufficient separation for adequate treatment. Even in systems treating high-strength sewage, this standard separation distance ensures the protection of human health and of the environment.

"Exceptions"

Some kinds of water may be discharged to the soil surface, to surface water bodies, or into groundwater without constituting failure of the onsite system. This is because the standards deal only with **sewage.**

Other types of water, including footing and roof drainage, and chemically treated hot-tub or pool water, should be dealt with other than through the onsite system. Greywater, including wastewater from bathing and washing dishes and clothes, *is sewage,* and all sewage must be properly treated.

Non-Code System

A number of other things could be inspected, including setback distances of system from wells and other structures or property lines, materials used in construction of the system, and the system size. All of these are criteria for new systems but are *not* a part of an existing system inspection unless required by the local unit of government or your customer. An existing system cannot be considered failing only because it does not meet the criteria for new systems.

A system may not be "up to code," but it is not necessarily failing.

Preparation and Record Review

The first step of the compliance inspection is the research phase. Gather all available data about the system. This may include local permits, the county soil survey, a review of any other data, and a homeowner interview. This interview is a particularly good idea if no records exist.

Begin by determining the age of the system. The older the system, the more likely problems are to occur. Also, older systems may have been using significantly different technologies than are currently in use. In particular, they may be significantly smaller and their ability to handle increased water use may be less. At some sites, an older system may mean no system at all, because many of the older systems were connected to county ditches or drainage systems.

Along with finding out the age of the system, review records of previous inspections. Older systems may not have been reviewed, or may not have any records available. On the other hand, newer systems may have complete records that make it easier to review and identify problems.

Make sure you know the standards set by the local unit of government. They may be more or less restrictive units of government will provide you with a written list of the differences.

The inspection is likely to require some digging, so you must know the locations of buried pipes and cables. The Distribution Box should be exposed on all inspections.

Prepare forms and equipment for the field inspection.

The Inspection

The inspection is likely to focus on a property transfer and the use of the system by a new owner. The inspection will be broken into three pieces: the current use of the system and the effects of that use, the condition and performance of the tank, and the condition and performance of the soil treatment system. The order in which you inspect the parts of the onsite system may be dictated by the site, but the following is a typical flow for completion. You are not require to address all the defects of the system, but a thorough inspection can be useful in the decision-making process.

System Use

Check the flow of wastewater going to the system. Flow can be estimated based on the number of bedrooms in the building. **Compare the number of bedrooms with the number of current residents, and consider patterns of water use.** If the residents are older, they may be very good at limiting water use, whereas the new residents might not be as efficient at using water. On the other hand, if the people moving in are employed full time and are not at home during the day, shower at a health club and eat out regularly, they will add very little water to the system, and a small system may be more than adequate.

An enormous difference in the flow from that same house is possible if a family with children is living in it, not just in terms of the total wastewater flow, but also in the duration of the high flows. In particular, if there are a number of teenagers, the amount of bathing and laundry can increase dramatically. All families go through high and low wastewater flow periods as kids are growing up.

All the current soil-treatment system sizing information is based on three feet of unsaturated soil. With less than the standard separation, the size of the soil treatment system cannot be calculated.

Separation from **bedrock** is a key to proper system performance because only adequate separation can ensure proper treatment and prevent the contamination of wells. In shallow-to-bedrock situations, drinking water wells are all related to the cracks in the bedrock. If untreated sewage enters the bedrock, it will flow in the same cracks. Wells can be contaminated very quickly.

Multiple families in homes or duplexes also can affect wastewater flow. Two or more families sharing an onsite system typically use more water than a single large family, because there are more meals prepared, dishwasher loads, and more loads of laundry.

The final water-use issue is leaky fixtures. Make sure that all of the water-using devices in the house operate properly. If they do not, they should be fixed. Repair or replacement of leaky fixtures is a highly effective, low-cost improvement to the system.

Hazardous Wastes

Systems serving businesses may be disposing of hazardous waste. If a residence or any other facility disposes of hazardous waste into an onsite system, the County Sanitarian must be contacted. A car wash is an example of a business whose wastewater would be considered hazardous waste.

In-Home Businesses

A number of in-home businesses can also affect the use of the system. The most common in-home business is childcare. Daycare facilities, because of the constant use and number of persons in the house, can put pressure on the system. Review the system design to make sure that the tank capacity is large enough to deal with the high flows, as well as that the soil treatment system can handle the total average flow. An effluent screen is often a good addition to a system to help it deal with this pattern of use.

Taxidermy is another in-home business that can affect an onsite system. The chemicals used during the process this can impair system function. Check the tank for these chemicals.

In-home lawn-care businesses can also cause problems. Again, the issue is improper disposal of chemicals, in this case insecticides, fungicides, and herbicides, which can cause trouble by harming the bacteria in the tank and in the soil.

Painting businesses run out of the home can add toxic chemicals to the onsite system, too. There may also be excessive hydraulic loading from washing brushes used to apply water- based paints, and the paints themselves can be a problem, when particles of pigment do not settle effectively in the tank and then plug the pores in the soil system.

Photo labs, too, can cause significant problems in septic systems because of the chemicals used. These chemicals, in particular the fixer, are toxic and do not settle out in the tank.

Home beauty shops can cause two different problems for the onsite system. The first is the excess hair entering the tank. If the establishment is only a barber shop, that is, the only services are washing and cutting hair, increased tank capacity and the use of an effluent screen should be sufficient to handle this in-home business. On the other hand, a beauty shop that uses chemicals such as bleach, dye and permanent solutions may be causing significant problems to the tank. Check the tank for evidence of chemicals.

The Bathroom

In any house, the number one place where water is used is the bathroom, where many water-using fixtures are located. If possible check all bathroom fixtures for leaks and drips. The primary water-user in the bathroom is the toilet. Check to determine that it isn't leaking or using extra water during flushing. It may use extra water because it isn't flushing effectively and is often flushed twice, or it may stick "on" so that water continues to run into the toilet tank even after it's full. On the other hand, the toilet may be a low-water-use model.

Finally, check for toilet cleaners that are automatically added with each flush. These chemicals can cause problems in the tank.

The bathtub should be noted, in terms of its use and size. Excessive numbers of large bathtubs may be a problem. An example of this would be in a bed-and-breakfast where there are multiple bathrooms that contain large tubs. A number of these larger tubs could overload a tank, but one in a household would not put it into a problem category.

The Kitchen

In the kitchen, too, there are a number of opportunities to use water and to otherwise affect the onsite system. Interestingly, the choice of food and of manner of preparation can have a significant impact on the tank and soil treatment area. In particular, large amounts of cooking oil or undigested food added to the system can cause significant problems, as can cooking frequent large meals for special events or as part of a home catering business.

Much of this undigested food is added through the garbage disposal. Use of the garbage disposal can cause problems, particularly if the onsite system is not maintained regularly. The issues associated with garbage disposals are that undigested food takes the bacteria longer to break down, that small pieces of undigested food are slow to settle, and that the use of the garbage disposal adds extra water to the system. Tanks serving homes with garbage disposals may need to be pumped out twice as often.

Another potential source of problems from the kitchen is the dishwasher, because of the high temperature of the water it uses. Hot water will keep oils from congealing and rising to the top of the tank, so that the oils move out into the soil treatment area. Use of phosphate soap may also cause problems in the system.

Other Water-Using Devices

The next water-user in the house is the laundry. The major impact here is the schedule of when laundry is done, whether a single load is washed every few days, or many loads are done one day a week. The better schedule is to spread the use of the washer out over the week, so that the tank isn't overloaded with water on a weekly laundry day. The soap that is used in the laundry may be critical if cast iron piping is a part of the system. Powdered detergents create crusting in iron pipes, leading to problems in the system. Otherwise, the use of laundry soap to manufacturers' recommendations is typically not a significant issue. Concentrated soaps are more likely to be overused.

Water treatment, such as a drinking water filter or an iron filter, should be reviewed. Some drinking water treatments add large amounts of water to the system. Verify that the system is operating properly and not increasing too much the use of water in the house. (The users of the system should check that filters are replaced regularly; they can actually be *adding* contaminants if they are not changed often enough.)

Another water-treatment device is the water softener. The major issue here is the addition of water to the system. If the water softener is operating properly, it's usually not a significant problem. On the other hand, many older water softeners sometimes stick "on" and can significantly overload a system. Older water softener products, particularly sodium-based salts, may be more harmful to the onsite system than some of the newer products.

High-efficiency furnaces are not a significant problem for the system, but may be a problem for the piping, because of the high acidity of the water coming from the furnace. It's been known to eat through pipes, particularly inexpensive plastic pipes. Furnace wastewater can also be a problem because it's added in very small amounts, so that as it flows through the pipes it can get cold enough to freeze. High-efficiency furnace discharge should be piped so that it is regularly flushed out either by the dishwasher, the shower, or the laundry.

Medical Conditions

The use of many medicines can affect the system. Antibiotics, for instance, can kill the bacteria in the system. The use of these drugs should be documented in case of problems in the system. Other medical conditions that could have an impact on the system would include bulimia, because of the increased addition of undigested food.

Non-Sewage Water

Other water-management practices that could be affecting the system. A swimming pool would be a problem if pool water was discharged through the system. That water, because of the use of chlorine, does not need to enter the onsite system and should be routed around it instead.

Roof or site drainage, any clean water that enters the site by rain or runoff, should not be directed towards the system at all and should be routed around it. This clean water includes groundwater on the site. If there is tile drain around the house, pumped by a sump pump, that pump should never discharge into the system.

Evaluating Sewage Tank Performance

The tank holds a wealth of information about the operation and performance of the whole onsite system. Some states use the tank as the single point of information about an entire system. Although your inspection will include examinations of other system components, start by opening the tank and looking into it. For many tanks that means opening the 20-inch manhole. For other tanks it means taking a section of the lid off. You have to be able to see the inside of the tank, so opening the four-inch inspection pipe will not be sufficient.

Finding the tank can be difficult. Water flows downhill, so usually the tank is downhill from the house. The sewer service coming out of the house will give you a general direction, and then look for clues: an inspection pipe, a low spot, dead grass, early snow melt, or other landscaping.

Flow, Settling and Bacterial Action

First, get a general overview of the tank and its contents. If there's a lot of floating material that doesn't belong in there, such as plastic products or undigested food, you know that the users of the system may be causing some problems.

The tank should be developing three layers, a scum layer on top, clear water in the middle, and a sludge layer on the bottom (see Figure G-1). If these three separate layers are not present, then the system is not operating the way it should, and you need to find out why. When wastewater doesn't form these layers, it's often because some chemical has been added that has killed the bacteria, or because one of the baffles in the tank is missing. Sometimes the layers will form but then become mixed due to turbulence in the water, in particular if there is a pump in the basement introducing too much water into the system.

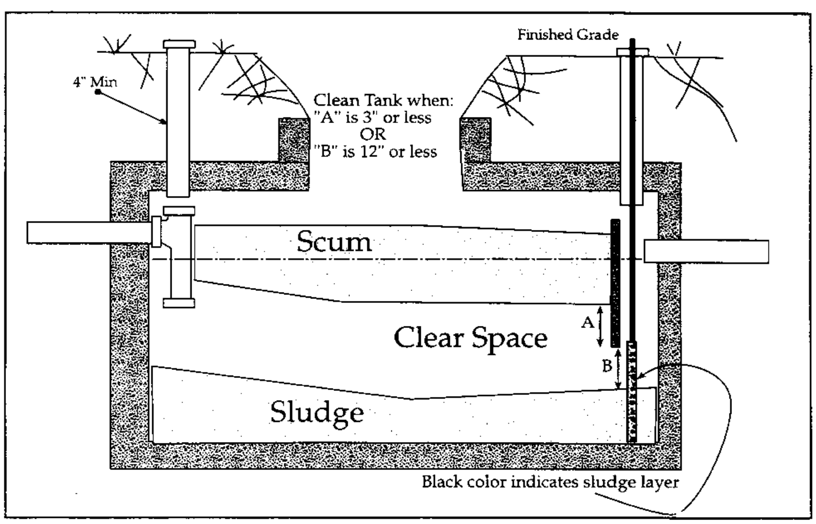


Figure G-1

Evaluate the scum layer. It should not be excessively thick, and should always be less than three inches from the bottom of the outlet baffle to ensure that excessive scum is not leaving the tank. The scum layer should also not be higher than the outlet baffle, or overflowing the baffle and flowing into the outlet.

No Scum	**Excessive Scum**
Water softener	Detergent use
No baffle	Grease & oil
Turbulence	

Excessive scum in the tank may mean that the tank needs to be cleaned out, or it may mean that the wastewater has high levels of soap or grease. Users of the system may be able to reduce the amount of soap or grease in the water, or they may have to have the tank cleaned on a more frequent basis. For systems serving commercial establishments, such as restaurants, it may be a good idea to extend the outlet baffles, so that the first of two or three tanks becomes a grease trap.

Another component of scum is undigested food. If a particularly thick scum layer contains a large proportion of undigested food, there is usually a problem in the house, either excessive garbage disposal use or a medical problem such as bulimia. The users of the system should deal with these issues.

Other problem materials to check for include feminine hygiene products, such as tampons and pads, and barrier-method birth control products, such as condoms. These products should not be in the tank! They will neither sink nor float; instead, they will tend to flow through the tank and into the soil system, where they can plug both the outlet line and the soil system. Users of the system should understand that these products must not become part of the sewage flow. For systems serving restaurants or other commercial establishments, an effluent screen to prevent these materials from leaving the tank may be necessary.

Evaluate the sludge layer. It should not be within 12 inches of the bottom of the outlet. Allow time for the sludge to settle before measuring this distance. Verify that the sludge is settling well and that there is not excessive movement of sludge out of the tank. Sludge will not settle properly if the water in the tank is turbulent. Turbulent conditions could be from a pump in the basement adding high volumes of water, “stirring up” the wastewater. Or there may simply be too much water entering the tank. If sewage flow from the house to the tank has increased since the tank was designed and constructed, the tank may not be large enough to handle the amount of wastewater entering it. Users of the system may be able to reduce their water use to improve the performance of the system.

If there is an excess of material that cannot be broken down by the bacteria in the tank, such as coffee grounds, soil, or soap, both the scum and the sludge layers can quickly become too thick. The only way to get these materials out of the tank is by pumping.

If the tank is over-full (if the water level is higher than the outlet invert), the system is not operating as it should. An over-full tank is not conducive to settling, so sludge and other solids may reach the soil treatment area. There may be plugging in the line, or the soil treatment system at the other end of the line may be plugged.

If a lift station is part of the system, the pumps may have had problems, causing the tank to overfill. If, after pumping out the tank, there is excessive runback (water entering the tank from the outlet side) into the tank, there is certainly plugging of the soil treatment area.

Effluent Quality

The performance of the onsite system can be determined by laboratory testing of the effluent. Septic tanks should produce effluent with a BOD of less than 220 milligrams per liter, TSS less than 65 milligrams per liter and G & O less than 30 milligrams per liter. When effluent has higher values than these, soil treatment systems typically develop problems.

Watertightness

The inspector must determine if a tank is watertight. Without inspecting the tank for soundness, the inspector cannot issue a certificate of compliance. Any tank that is not watertight is, in essence, a cesspool. If the tank is watertight, then it meets the minimum requirement.

Watertight means that water is not allowed to flow in or out of the tank other than through the design penetrations (inlet and outlet pipes). Watertightness is critical to tank performance. Excess water entering the tank from surface runoff can result in inadequately-treated effluent entering the soil treatment system, causing premature failure of the soil system. Untreated wastewater entering the soil from a leaky tank presents health risks to humans and can have grave environmental consequences.

The licensed pumper can help determine if the tank is watertight, and may be a useful resource about the system. General experience has been that most tanks without a maintenance access are not watertight.

Verify that the concrete walls are watertight. Pay particular attention to seams in the walls. Tanks with mid-wall seams have a high probability of breaking through and not being watertight. These walls should include some type of tongue and groove; check this joint.

Inspection of the walls includes checking the corners where the cover and the walls meet. These joints also should have a tongue-and-groove connection and some type of a mastic sealer in and on them. The other watertight surface is the tank bottom. This may seem pretty straightforward, but many tank floors were not properly constructed and are not watertight.

Next, check all the penetrations, including inlet, outlet, manhole riser, lid of the manhole, and inspection pipes. All of these should be watertight. A very good hint that they are not is the intrusion of roots. The presence of roots indicates a problem that has been in existence for a long time.

Another indication of a problem is a trickle of water entering the tank. Surface water must not be allowed to enter the system. One place it might is through the manhole, which can be buried to minimize some of the surface. If it is not buried, it should be elevated at least one inch above the finished grade to guarantee that you do not have excessive flow into the tank. Sealing this lid may seem like a good option, but sometimes a sealed manhole lid becomes permanently sealed and cannot be opened for maintenance.

A number of local units of government require that the maintenance access be brought to the surface. This is a good idea, but if access is not brought to the surface, the system can still be in compliance.

Inspection pipes must be watertight at the surface of the tank. More importantly, they must have a cover on them. *A coffee can is not a cover.* The cover should be a tight-fitting plastic pipe. The best cover would be a threaded cap, to allow repeated opening without affecting the fit of the cover.

There should be self-sealing gaskets wherever penetrations meet the tank walls or lid. A number of the newer septic tanks have gaskets that require some type of a masonry support to work. The riser itself needs to be watertight at all joints; plastic and concrete materials are available to achieve this. The typical length of the riser is ten to 12 inches, so using concrete means more pieces are necessary to bring it to the surface, and every connection must be watertight.

With large-diameter smooth-wall plastic pipe, it is critical that a seal be made where the pipe is connected to the tank. Simply setting the pipe on top of the tank does not make a watertight connection.

Another consideration is the location of the tank in the landscape. It should be located where a minimum amount of water will run off over it. Be particularly aware of hard surfaces, from which the most water will run off; ideally, the tank would be upslope from these.

Baffles

Current Chapter 69 requires that the baffles are PVC tees, however many of the older tanks have different types of baffles.

Check the baffles in the tank. The baffles begin the settling process by forcing the flow down, keep the scum inside the tank and ensure that effluent leaving the tank comes from the clear liquid layer. If there are problems with the baffles, the system cannot work properly. One way to correct the problem of too many solids leaving the tank is to install effluent screens.

There are two general types of baffles: plastic pipe (sanitary tees) and wall baffles. The advantage of wall baffles is that they are built in. They have a larger space to allow larger solids to enter the tank. The downside of the wall baffles is that if the tank is not properly constructed the baffles will be significantly impaired. It's also difficult to add effluent screens to a tank with wall baffles. But either type of baffle will work adequately as long as it's in place.

Baffles must be properly connected. A wall baffle or a large pipe baffle should be connected in such a way that it will not corrode. All baffles must be securely attached, so they remain in place over the life of the tank, and they must be inspectable. Baffles made of PVC sanitary tees must be properly glued and affixed onto the system.

During the inspection you also want to verify that nothing is plugging the baffles.

It's a good idea to verify that there is enough free space between the inlet pipe and the baffle to allow the free flow of both water and the solids in the water. There should be two to four inches between pipe and baffle. Note the depths of the baffles: the inlet baffle should be at least six inches deep. The outlet baffle should be drawing from the clear portion of the tank, typically about 40% of the depth. If the tank's function is to handle excessive suds or grease, the depth of the outlet baffle may be lowered so that the tank functions as a grease trap.

Tank Construction and Installation

Check the structural integrity of the tank. The lid should be strong enough to support the weight of a man (say, 200 pounds.). If the lid is at the soil surface strength is critical. Some concrete tank lids have two different thicknesses to hold them in place, which is a good idea, but if the top lid is too thin there can be problems.

Walls must be strong enough to maintain seven feet of saturated soil overburden. Refer back to the original design of the tank to check this. If the tank is deeper than seven feet there should be special design considerations so that its performance will be adequate in those conditions.

Check for settling of soil around the tank. Depressions in the soil at the edges of the tank can lead to ponding of rainwater, followed by infiltration. The pipe going out of the tank should also be constructed and installed to minimize soil settling. Note the presence of cast iron pipe, which can react with soap products, causing corrosion and eventual flow problems. Cast iron pipe should be avoided or replaced if at all possible.

Odor

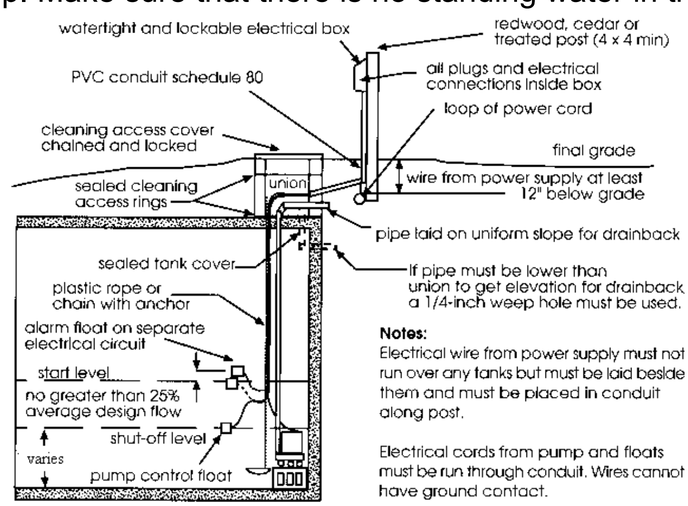
Is there any odor in the vicinity of the tank? Odors typically indicate a venting problem, but may indicate system failure. Odors should be vented out through the system, not back through the house.

Evaluating the Lift Station

Inspect how the water is moved out to the soil treatment system, beginning with the lift station, see Figure G-2. You should be able to access the pump without having to enter the tank. The manhole should be brought to the surface, all electrical connections should be such that there is no sparking, and there should be a remote shut-off for the pump.

There should be no sludge moving into the lift station. If there's excessive sludge in the lift station or the first section of the trenches, there are probably turbulent conditions in the tank, resulting in poor settling. As discussed above, users of the system can often make changes to alleviate the turbulence.

Check the lift station to see that it's watertight, and inspect its structural integrity just as you inspected the sewage tank. Verify that the pump has adequate capacity, taking into consideration friction loss. There should be a quick disconnect set-up. Make sure that there is no standing water in the piping.



Evaluating Soil System Performance

Drop Boxes and Distribution Boxes

We recommend digging up the Distribution Box and sometimes a lateral line. Inspect the distribution system that brings effluent to the soil treatment area, either drop boxes, valve boxes, or distribution boxes. (These are also good places to check the performance of the tank.) Verify that drop boxes have solid walls and bottoms. Although drop boxes need not be absolutely watertight, they should be constructed in such a way as to minimize outflow. They should have minimal side seepage, so the presence of roots may indicate a problem. The penetration should be solid and free.

Check distribution boxes for structural soundness and watertightness. Root infiltration is a definite indication of a problem. Inspect piping for bows, drops or ponding water, which indicate possible settling of the soil.

If the distribution system is over-full, it's an early sign of problems, possibly due to lack of maintenance or sludge flow-through. There may be sludge in the maintenance box or plugging in the soil system itself.

Piping

Examine the piping materials. As mentioned above, cast iron can be a problem because of reactivity with some detergents. Problems with clay and orangeburg pipes are also common, as both these materials are likely to crack, and cracking leads to troubles with roots. If there's excessive root infiltration in the piping, either the soil is too wet, or else the soil is fine, but the piping isn't watertight.

Soil

Verify the soil type, its texture and structure. Usually this is based on the perc rate of the soil. Use this information to estimate the proper soil sizing factor for the system.

More important than soil type in terms of performance is the depth of the system. Check the distance from the bottom of the system to the limiting layer (bedrock or saturated soil). The system should have been designed and constructed with a "design depth" of at least three feet of soil between the system and the limiting layer. Based on current research, three feet of separation will result in excellent treatment.

Once the system has been constructed and has begun accepting effluent, the depth to saturated soil will change. The new separation is called the "operating depth": the actual depth of the water table under the working system. Operating depth is always less than design depth. How much less depends on a number of factors, including surface water drainage and system application rates. But if a system is properlydesigned with three feet of separation, the operating depth should be sufficient to maintain treatment. That is, from the limiting layer to the bottom of the system, there will be some non-saturated soil.

Take a boring of soil and use the Munsell color book to classify the soil. This boring should be located *near* but not *in* the system, because the system can change the soil colors, giving a false reading on the separation depth. If the boring shows wet soils all the way up to the bottom of the system, that system has **zero** operating separation and is not treating the wastewater, which is flowing into the groundwater and causing problems. There has been a lot of discussion and debate about the proper operating separation. So far, there is no accepted figure for this separation, except that it must be greater than zero.

It is also important that the system not be **too deep**. “Too deep” means three feet of cover or four feet to the bottom of the system. Soil treatment systems should be relatively shallow to maximize oxygen transfer to the bottom of the system. Although shallower systems perform better, a deep system is not necessarily failing.

Surface Water

Look at the impact of surface water on the system. Inspection pipes allow visual observation of how much of the system is used, and are therefore an important component of the soil treatment system. But they must be watertight and have watertight lids to minimize the addition of water to the system.

Another issue in terms of surface water is the location of the system in the landscape. Trenches should be located along contours. They should not be located in drainage areas such as the bottom of a drainageway, or in the middle of or transecting a drainage swale.

Surfacing Effluent

If the soil treatment system is over-full, effluent will come to the soil surface. If effluent is surfacing, the system is failing and is an imminent public health threat. People are creative at hiding sewage! Odor is a great indicator of surfacing effluent. Spongy ground over the top of the system is another indicator. Check for cattails or other landscaping that may hide surfacing effluent.

Dye testing is one way to identify failures, but it will miss some failing systems, so it cannot be used as the only criterion. There are a number of new dyes that are available for use. They include the use of optical brighteners for the identification of sewage. The process for using brighteners includes collecting a sample on a cotton swab and having the cotton analyzed. This method is still being researched.

It is important to identify the cause of the failure. It may be due to plugging of soil pores, sewage flows in excess of the soil’s ability to accept effluent, soil compaction, or malfunction or plugging of the distribution system. You may already have found the cause of the problems in your inspection of the tank or lift station.

Setbacks

Check setback distances. The most critical, in terms of possible contamination, are the setbacks from the well. The setback from the well to the system is based on the construction of both well and system. The distance should be calculated from the absorption area of the well, and based on the type of well and the type of soil treatment system. If the well is shallow, the setback is more critical than for a deep well because of the potential connection between the two systems. Setback distances from buildings or property lines, may be dictated by local ordinances.

System Sizing

Note the percentage of the soil treatment system being used, and make a record of it. The users of the system should understand that proper maintenance of their tank and protection of their soil treatment site in terms of drainage, mowing, and avoiding compaction is very important.

The texture of the soil determines the size of the soil treatment area. If mistakes are made in design, the system will have a hard time performing properly. The configuration of the system—its layout with respect to the contour of the land—is the second consideration in sizing a soil treatment system.

Reports

The final step in the inspection is completing the reports. Appendices G-1 through G-6 are sample inspection forms. The keys are that your report identify the type of system, address the criteria for a rating of “failing,” and identify that you cannot guarantee performance.

Appendix G-1: Construction Inspection Form

Date ordered _____________ Ordered by ________________________

Date/time of inspection ________________ Fax to _______________

Send copy to _______________________________________

Site address   Billing address

_________________________   __________________________

_________________________   __________________________

_________________________   __________________________

Site Preparation   Date ___________________

1. Is the site in the right location?   ____________

2. Roped off and protected from traffic? ____________

3. Small trees and brush cleared?   ____________

4. Provisions for site drainage?   ____________

5. Fill incorporated with underlying soil? ___________

6. Distribution field shaped to shed water?___________
7. Lines staked out properly?   ___________

8. Comments:

____
____
____
____
____
____
____
____

Construction Check

Date _________

1. Tanks:
   Proper size and type? ___________

   Installed properly? ___________

2. Manifold and laterals:
   Depth of gravel suitable? ___________

   Protected from stones entering system? ___________
   Holes drilled properly, placed downward? ___________
   Manifold and laterals connected properly? ___________
3. Water conservation devices installed in house? ___________
4. Comments:

____
____
____
____

Operation Check

Date _____

1. Pump and switches operating? ___________

2. High water alarm operating? ___________

3. Electric receptacle outside pump tank? ___________

4. Wiring meets NEC? ___________

5. Pressure head in lateral lines:

   a. lowest: _______________ feet

   b. highest: _______________feet

6. Comments:

____
____
____
____

Final Landscaping

Date ______

1. Site shaped to shed rainwater? ____________

2. Any low areas? ____________

3. Diversion drains? ____________

4. Downspout drains directed away from system? ____________
5. Seeded and mulched? ____________

6. Comments:

____
____
____
____
____

Appendix G-2: Recommendations for Checking Homes with Onsite System Failures

System failure may be caused by a single factor or a combination of several factors. Some of the causes are easily corrected and may not require extensive work to the soil absorption area. A thorough investigation is needed before repairs can be recommended.

When introducing yourself to the homeowner, explain that **no** water should be used in the house until after your inspection is completed. Even a single toilet flush can make the survey inaccurate. It's best to do the investigation after a heavy rain.

The following form lists the items that should be checked out and verified to eliminate contributing causes of septic field failures.

Failed System Inspection Form

Owner ____

____

____

Legal Description
subdivision ____

____

_______1/4 section _______T ________ R

Type and Location of Failure

____

____

____

Inspection Procedure

1. After making sure no one is using any water, check the **water pressure gauge** in the basement. A recheck of this gauge after you complete your inspection will determine if any leaks are occurring that were not detected.

Is there a drop in pressure? Pressure reading: ________________

Satisfactory ___ yes ___no

2. The **footing drain sump pump pit** must be checked to see that the water is not being pumped into the septic tank. Many older homes had a by-pass valve with only one sump and pump. The valve was to be turned one way when doing the laundry and back when the wash was completed. Laundry wastewater was to be pumped to the septic tank while washing clothes, and rain water from footing drains would be pumped to the ground surface or to the road ditch at all other times. If the valve was not returned after doing the laundry, rainwater would be pumped to the system and failure would result due to excess water.

Recommend the installation of a separate sealed sump and pump that discharges to the septic system to handle laundry waste exclusively. Sometimes the washing machine pump will be able to pump into the sanitary sewer line.

Satisfactory ___ yes ___no

The **laundry and/or sewer ejector sump pit** should be checked. It should have a sealed sump pit. The bottom should be intact and water-tight. Sometimes footing drain water enters the laundry sump pit through cracks or around the four-inch pipe from floor drain or laundry pipes and is pumped to the septic tank. This is especially true when the two sumps are adjacent to each other.

Satisfactory ___ yes ___no

Problems that may be found when checking sump pits and pumps:

One sump pump for both laundry and footing drains. _______

By-pass valve on one sump pump. _______

Leaky sewer injection on laundry sumps. _______

Bottomless laundry sumps. _______

Leaky joints in cast iron below floor. _______

Recommended ways of checking one and two sump pumps:

Check location of discharge. If it is to the sewer, pull the plug on the pump and fill with water to the top of the pit or floor drain. Check for any drop after approximately five to ten minutes. The water level should remain constant at all times.

Satisfactory ___ yes ___no

If the clearwater discharge is being pumped toward the field area, even if it is underground, put dye into the sump and run enough water that the pump turns on. This will determine whether clear water is infiltrating into the tank and seepage lines.

Be sure to replace plug.

Satisfactory ___ yes ___no

4.The water softener should be checked to determine if backwash recharge brine is being discharged to the seepage field. The salt solution usually does not hurt the septic tank; however, it may change the structure of some soils and hasten plugging of the soil pores. The recharge operation also adds excess water to the system. If recharge water is discharged to the ground surface, it should be directed away from the seepage field.

Do not recommend the elimination of the water softener because soft water requires less water for washing.

Satisfactory ___ yes ___no

5. Check the humidifier**.** Some humidifiers on furnaces are designed without shutoff valves. The amount of water that enters the furnace is supposed to be equivalent to the amount the warmed air will evaporate; however, any excess is discharged to the floor drain and could result in large quantities of clear water being added to the septic system. Self-cleaning humidifiers can add up to 125 gallons per day to the sewer system.

Satisfactory ___ yes ___no

House

The float valves in all toilet tanks should be checked. If any are sticking, they should be repaired or replaced. Sometimes, toilet manufacturers and plumbers do not take the time to ensure that the float shutoff valve is working properly or that the float ball is at the proper height. Any variation to this height could cause An adjustment should be made if the float is not working correctly.

Satisfactory ___ yes ___no

The water elevation line in the flush tank should be approximately one inch below the top of the overflow pipe. Also, the flapper or cone at the bottom of the toilet tank should be checked: it must reseat in the hole after each flushing. A little dye or food coloring should be added to the tank to determine if all the dye stays in the tank or if it leaks into the bowl.

Satisfactory ___ yes ___no

All faucets should be checked for dripping, and washers replaced where needed. Even a small drip adds many gallons of excess water over time.

Satisfactory ___ yes ___no

Septic Tank

Many tanks are not watertight. During wet weather the septic tank should be pumped and a check made to see if any water is flowing into the tank when all water is shut off in the house. There is a possibility that foundation drains are connected to the building sewer or that water is flowing along the outside of the sewer line and infiltrating the septic tank and/or soil treatment area. Inspection ports, manhole covers and lid joints are normally not watertight, allowing infiltration if surrounding soil becomes saturated.

Satisfactory ___ yes ___no

Is the septic tank located in a drainageway or a depression created by a lot that slopes up in the rear? Subsurface drainage may be needed to protect the tank from infiltration.

Satisfactory ___ yes ___no

Is the septic tank more than eight inches below the ground surface? The inspection ports and manhole should have watertight risers to the ground surface. This is especially important in soils that have seasonally high water tables.

Satisfactory ___ yes ___no

Many complaints on hillside houses, especially those with walk-out basements, have led to the discovery that it is common for the sewer line to pass under the footing tile. Although direct connections are no longer being made, the trench cut for sewer line to the tank provides a direct passageway for water to seep from the foundation footing to the septic tank area. Is the tank top deeper than the basement floor?

Satisfactory ___ yes ___no

The Uniform Building Code recommends laying the sewer pipe on gravel or sand, which is a sure way to intercept footing water and provide a direct path to the septic tank area from the house. If infiltration is occurring at a house with an open basement, check that any gravel that may have fallen into the house sewer trenches from the footing gravel has been removed. Clay should be packed around the house sewer pipe, especially under the pipe, for a full five feet.

Satisfactory ___ yes ___no

Sometimes small holes are manufactured in concrete septic tanks to eliminate suction, allowing the form to be removed. These holes must be sealed.

Satisfactory ___ yes ___no

A hole may have been chipped in the tank to allow easier installation in high groundwater soils. If the water drops below the tank outlet, it could cause premature failure by allowing floating solids to rise on the outlet side of the baffle. Make sure the tank is watertight below the elevation of the outlet sewer pipe.

Satisfactory ___ yes ___no

The outlet baffle should be checked to be sure it is in good condition. Corrosion of concrete baffles can cause the baffle to disintegrate above the water level and allow solids to enter the field, leading to premature failure. If this has happened, replace the baffle with a plastic outlet tee having proper submergence.

Satisfactory ___ yes ___no

Seepage Field and Yard

Drop boxes and distribution boxes should be exposed and checked for infiltration and for the depth of water in each of them. Every drop box where the trench has been used should be full, and no water should be running into or out of the first or any other drop box when the water in the house is off.

Satisfactory ___ yes ___no

The roof runoff and/or downspouts should not drain toward the soil treatment unit or septic tank.

Satisfactory ___ yes ___no

The sump pump discharge, if pumped to the ground surface, should be diverted away from the seepage field and septic tank area.

Satisfactory ___ yes ___no

If the seepage field or septic tank area has a depressional area running through it, even a slight one, an interceptor tile drain or surface diversion should be installed above it to intercept this flow and divert it away from the soil treatment area or tank.

Satisfactory ___ yes ___no

Systems that are installed too deep, even though only a portion of the system is too deep, can pick up large quantities of subsurface water. A deep trench can act like a field drain tile and feed groundwater into the system instead of percolating sewage. A subsurface drain may correct this problem.

Satisfactory ___ yes ___no

In humid areas, a depression over seepage lines can add many gallons of water to the field. A one-inch depression over a three-foot-wide trench 100 feet long will store 186 gallons of water what will infiltrate into the field. A three-inch depression over 100 feet will add more than 558 gallons of water to the field. Add enough tile over seepage lines during initial construction so that depressions do not occur.

Satisfactory ___ yes ___no

Parking areas should not drain toward seepage fields.
Dry wells, if constructed for roof drains and sump pumps or water softeners, should be located so as to not interfere with the soil treatment area.

Satisfactory ___ yes ___no

With drop box distribution, the last or lowest line trench should be where surfaces first when the system is overloaded. If this has occurred, all other lines should be checked to determine that they are also full to the overflow level. If one or more is not full, distribution to the higher lines is defective and portions of the field are not working.

Satisfactory ___ yes ___no

The interceptor drain outlet pipe may be covered over and plugged; if so, it must be opened up to permit drainage. A plugged curtain drain could be worse than no curtain drain.

Satisfactory ___ yes ___no

Landscape finish grade, especially when a slope is involved, may leave too little dirt above the stone in the trench; usually a minimum of six to eight inches is needed.

Satisfactory ___ yes ___no

Many people do not realize that agricultural field tiles are almost always installed 36 to 45 inches deep to drain from fields. These tiles may be under the seepage trenches and not be found during construction. There is usually no map of farm drain tiles. These tiles may flood out a system or permit sewage in the trench to flow out untreated.

Satisfactory ___ yes ___no

Improper protection of the top of the rock layer by straw, untreated building paper or pervious nylon fabric will allow the migration and infiltration of clay particles and cause premature clogging.

Satisfactory ___ yes ___no

Drainfield trenches must be constructed on the contour and kept level. A trench that slopes away from the drop box may result in effluent surfacing rather than flowing to the next trench.

Satisfactory ___ yes ___no

Not backfilling a system before it rains or freezes, or improper backfilling, such as leaving depressions or ridges, will cause permanent damage to the system.

Satisfactory ___ yes ___no

Check to see that no underground utility has been placed in the soil treatment area, as it could damage the septic system and cause effluent to surface. Installation of an underground sprinkler system could damage thesoil treatment system or result in overloading of the system.

Satisfactory ___ yes ___no

Poor maintenance by the homeowner can cause many problems.
The septic tank must be cleaned routinely; if it is not, the suspended material and/or solids will enter the field and permanently damage the system.

Satisfactory ___ yes ___no

Excess grease will cause system plugging in a very short time.This is a problem for restaurants, and also for homes where this waste is not separated.

Satisfactory ___ yes ___no

Systems initially designed for a two-bedroom home may experience overloading if the home is later converted to three or four bedrooms and occupied by a large family. Additional sources of excess water use include water-using appliances and entertaining regularly. Most systems are not designed for the increased water use and the undersized system may be the reason for sewage surfacing.

Satisfactory ___ yes ___no

Soils may have other problems, especially where impermeable layers are near the surface:

Satisfactory ___ yes ___no

Where lateral movement of groundwater is necessary for the proper operation of the system, roads or driveways on a downhill side will block the lateral movement and cause the system to fail.

Satisfactory ___ yes ___no

Water ponded by road ditches or other landscaping will slow the lateral movement of groundwater and reduce the rate at which the soil treatment unit will accept effluent.

Satisfactory ___ yes ___no

Manmade pools or detention areas adjacent to soil treatment systems can cause problems. The level of saturated soil adjacent to a pond could be as high as or higher than the pond outlet. The soil bank from digging the pond may result in compaction of the soil pores and slowing of the normal movement of water.

Satisfactory ___ yes ___no

Soil compaction may result from some construction procedures. Installing the system when the ground is wet results in compaction, reducing the ability of the solid to accept effluent.

Satisfactory ___ yes ___no

Estimates of compaction:

- If no depression is created, some compaction may occur, up to 14 inches.
- If a one-inch depression is created, up to 20 inches of soil may be compacted.

• If a two-inch depression is created, up to 28 inches of soil may be compacted.

The following individuals and equipment can cause compaction: developer, road contractor, excavator, cement truck, delivery truck, septic contractor, workers’ cars, landscape contractor, and the homeowner.

Appendix G-3: Maintenance Inspection Checklist

Date ordered ____________ Ordered by ______________________

Date/time of inspection _______________ Fax to ______________

Send copy to ____________________________________

Site address   Billing address

_______________________   ________________________

_______________________   ________________________

_______________________   ________________________

Inspection Date ______________

System Type _____ _____________________________________

Visual Site Examination

1. Any rainfall in last three days? ________________

2. Effluent ponded on surface? ________________

3. Indications of recent ponding? ________________

4. Ground above system damp and mushy
   compared to surrounding area? ________________

5. Noticeable odor of sewage? ________________

6. Other __________________________________ ________________

If any “yes” answers, sketch location and extent on last page.

Site Maintenance

1. Condition of vegetative cover ____
2. Site drainage (roof water, ditches, etc.) _____ ______________________
____

3. Riser and lid ____

4. Turn-ups present and accessible? ❑ yes ❑ no

5. Erosion ____

Pump Examination

1. Pump and switch properly plugged in? ❑ yes ❑ no
2. Pump operating? ❑ yes ❑ no

3. Switch operating? ❑ yes ❑ no

4. Good seat where supply line leaves tank? ❑ yes ❑ no
5. Quality of effluent
   Greasy? ❑ yes ❑ no
   Sludge accumulation? ❑ yes ❑ no

6. Measure pressure head and adjust.

   Initial head: ______________ feet_________________

   Adjusted head: ___________ feet_________________

7. Comments on problems noted above:

____
____
____
____

Homeowner Comments

____
____
____
____
____

Additional Observations

____
____
____

Sketch of Problem Location(s), Extent

APPENDIX G-4: NAWT INSPECTION REPORT (EXPANDED VERSION)

Date ordered ____________ Ordered by ______________________

Date/time of inspection _______________ Fax to_______________

Send copy to ____________________________________
Site address   Billing address

_______________________ ________________________

_______________________ ________________________

_______________________ ________________________

This information may be critical later in the event of problems.

A. General Information—obtain as much as possible when ordered.

1. Age of dwelling _____ years   2. Age of system _______ years

May give insight into type of system, typical maintenance or permit requirements.

3. Number of people occupying dwelling
   sellers____   anticipated ____
4. Number of bedrooms in dwelling ______

May give insight into flow, use of system or if the system has been overused.

5. Is dwelling currently occupied?   Yes   No   Unknown
6. If dwelling is unoccupied, how long has it been vacant? ______

May give insight into last use. If the system is not in use, it may give a false reading of "acceptable." Some companies will not complete an inspection unless the building is occupied.

7. Has there ever been a backup in the house? Yes No   Unknown

First direct question on system performance. A "Yes" points to problems. If the correction was flow reduction, new owners may have problems right away. If problems are seasonal, there may be saturated soil conditions in the soil treatment area. A properly designed system should work year-round.

8. List any known repairs made to the system

Check any permanent records available on the system.
Verify that the work was appropriate for the system.

9. Has the system been inspected by others? Yes No
   If so, did it fail? Yes No

This should help you avoid professional pain. Consistency in inspections is important.

10. Date tank last pumped _________ At what frequency? ______

Additional Comments

B. System Type

1. Components of Sanitary Sewage Disposal System— check all that apply

❑ Septic tank _______gals	❑ Distribution box	❑ Trenches
❑ Aerobic tank ______gpd	❑ Sand filter(s) bed(s)	❑ Seepage
❑ Cesspool _________gals	❑ Vault system	❑ Chlorinator
❑ Mound	❑ Spray irrigation _____gals	❑ Grease trap
❑ Stream discharge	❑ Other__________	❑ Pump

This will give a space to identify the type of system located at the site. If the system type is not on the list, make a note.

2. Is there a garbage disposal hooked up to the system?
   Yes No Unknown

3. Is there a greywater runoff or drainage system? Yes No
   If yes, give location ________________________________
   If yes, what type of system ___________________________

4. Is any part of the system below a deck, pool, or driveway?
Yes No If yes, give details______________________________

May give insight into the use and long term performance of the system. A garbage disposal indicates a need for increased maintenance. Greywater may npt drain to surface. Check local ordinances for information about systems under structures.

C. Evaluation Procedures

1. Located, accessed, and opened the tank cover. Yes No

The inspection of the tank must be completed by looking inside the tank.

Approximate depth of tank access below grade____/____ft/in
If at grade, is the cover “child proof?” Yes No

This gives a quick safety check. If the system is extremely deep, proper maintenance of the system may be difficult and may be neglected.

2. Flush all toilets once and run all fixtures to determine that they flow into treatment tank. Introduce water into the system at the rate of 3-4 gpm (this is the flow of one spigot fully opened) for 20-30 minutes. Observe the water level in the treatment tank. Does the water level change? Yes No

There should be no significant change in the water level. As water is added, it should move through the tank. If the tank shows an increase in depth, there may be a plugging problem in the system.

3. Opened inspection port over inlet baffle to check water level in tank and that inlet baffle is clear of debris. Yes No

The baffles should be properly attached and open for flow to work properly. Piping materials should be identified; if problems exist due to poor materials, note this.

4. Pumped out primary treatment tank, listened and observed for backflow into the tank from the outlet pipe. Yes No

Backflow indicates a system that cannot handle the flow entering it. An inspection of the treatment area should follow the discovery of backflow. Potential reasons for backflow include plugged piping (materials, roots), and plugged soil system (improper use, overuse, age). *Caution!* Do not pump treatment tank if there is evidence of a malfunction in any portion of the system.

5. Inspected the condition of the primary treatment tank for cracks, infiltration, deterioration, or damage and the integrity of the inlet and outlet baffles for deterioration or damage.
Yes No

Do this using a flashlight and mirror. It should not be necessary to enter the tank. A cracked tank will not hold water in or out. This system is not operating as designed and should be noted. NEVER enter a tank unless proper confined space entry procedures are followed!

6. Properly closed the tank cover and backfilled. Yes No

7. Does the system contain a dosing or pump tank, ejector or grinder pump?
Yes No

If so, is the pump elevated off the bottom chamber? Yes No

This protects the soil treatment system from excessive solids.

Does the pump work? Yes No

Proper operation of the pump is necessary for the system.

8. Is there a check valve, is the purge hole present? Yes No

This may indicate a potential freezing problem.

9. Is there a high water alarm? Yes No

Does the alarm work? Yes No

10. Do electrical connections appear satisfactory? Yes No

The electrical connections should also be viewed for clear safety issues.

11. Can surface water infiltrate into the tank? Yes No

Clear water entering the tank will create a significant problem for the system. Many times fixing this problem will bring back a failed system. If the system is failing, the integrity of the tanks should be checked first.

12. Cleaned the pump tank. Yes No

13. Probe the drainage area to determine its location and to check for excessive moisture, odor, and/or effluent. Is there—

Any indication of a pxrevious failure? Yes No

Seepage visible on the lawn? Yes No

Lush vegetation present? Yes No

These are clear indicators of problems. If possible, the problems should be identified. Potential reasons overuse, overloading with BOD, improper construction, plugged system due to improper use, overuse, age.

Ponding water in the aggregate? Yes No

This may be an early sign of failure. Distribution methods to the system may affect the final outcome. This is a good question, but a failed system it does not make.

An even distribution of effluent within the field? Yes No

14. Distance between water well and system: _____ feet.

Does this distance meet local code requirements?
Yes No

This is an excellent check but local codes vary. Check before verifying the setback. Also the distance does not guarantee a “good well.” Be clear that this is not a well inspection

15. Explain answers as necessary

D. Sketch the System—use a separate sheet.

For reproducible results, show dimensions from structures that will not change, such as corners of the house. Show details such as the road in relation to the house to get the correct orientation. Show all located components.

E. Checklist Summary

1. Treatment in tank is ❑ in compliance.
❑ not in compliance.

2. Absorption system is in ❑ in compliance.
❑ not in compliance.

3. If a sewage pump is utilized, the pump is
❑ in compliance.
❑ not in compliance.

The final statement of the system is necessary for the system inspection to be complete. A judgment on the acceptability is what you were hired for, so come to a conclusion.

F. Company Disclaimer

Based on what we were able to observe and on our experience with on-site wastewater technology, we submit this Onsite Sewage Treatment System Inspection Report based on the present condition of the onsite sewage disposal system. ____(company name)__________ has not been retained to warrant, guarantee, or certify the proper functioning of the system for any period of time in the future. Because of the numerous factors (usage, soil characteristics, previous failures, etc.) which may affect the proper operation of a septic system, as well as the inability of our company to supervise or monitor the use or maintenance of the system, this report shall not be construed as a warranty by our company that the system will function properly for any particular buyer.

_____(company name)_____ hereby **DISCLAIMS ANY WARRANTY,** either expressed or implied, arising from the inspection of the septic system or this report. We are also not ascertaining any affect the system is having on the groundwater.

It is important that the client understand that this inspection does not guarantee that the system will perform for any period of time.

Inspecting Company

______________________________ Phone_____________________

______________________________ License No._________________

____

I have studied the information contained herein and certify that my assessment is honest, thorough, and, to the best of my ability, correct.

Name_____________________________

Title_______________________

APPENDIX G-5: NAWT ONSITE SYSTEM INSPECTION REPORT

Date ordered ____________ Ordered by ______________________

Date/time of inspection _______________ Fax to ______________

Send copy to ____________________________________

Site address	Billing address
_______________________	________________________
_______________________	________________________
_______________________	________________________

A. General Information

1. Age of dwelling______ years

2. Age of system_________ years

3. Number of people occupying dwelling
   sellers____ anticipated ____

4. Number of bedrooms in dwelling_________

5. Is dwelling currently occupied? Yes No Unknown

6. If dwelling is unoccupied, how long has it been vacant? ______

7. Has there ever been a backup in the house?
   Yes No Unknown

8. List any known repairs made to the system

9. Has the system been inspected by others? Yes No
   If so, did it fail? Yes No

10. Date tank last pumped __________

At what frequency?__________

Additional Comments:

B. System Type

1. Components of system—check all that apply

❑ Septic tank ______gals ❑ Distribution box ❑ Trenches

❑ Aerobic tank ______gpd ❑ Sand filter(s) ❑ Seepage bed(s)

❑ Cesspool _________gals ❑ Vault system ❑ Chlorinator

❑ Grease trap _______gals ❑ Spray irrigation ❑ Mound

❑ Stream discharge ❑ Other__________ ❑ Pump

2. Is there a garbage disposal hooked up to the system?

Yes No Unknown

3. Is there a greywater runoff or drainage system? Yes No

If yes, location________________________________

If yes, type of system________________________________

4. Is any part of the system below a deck, pool, or driveway?

Yes No

If yes, details__________________________________

C. Evaluation Procedures

1. Located, accessed, and opened the tank cover. Yes No

Depth of tank access below grade____/____ft/in

If at grade, is the cover child-proof? Yes No

2. Flush all toilets once and run all fixtures to determine that they flow into treatment tank. Introduce water into the system at the rate of 3-4 gpm (this is the flow of one spigot fully opened) for 20-30 minutes. Observe the water level in the treatment tank. Does the water level change?

Yes No

3. Opened inspection port over inlet baffle to check water level in tank and that inlet baffle is clear of debris. Yes No

4. Pumped out primary treatment tank, listened and observed for backflow into the tank from the outlet pipe. Yes No

5. Inspected the condition of the primary treatment tank for cracks, infiltration, deterioration, or damage and the integrity of the inlet and outlet baffles for deterioration or damage.
Yes No

6. Properly closed the tank cover and backfilled. Yes No

7. Does the system contain a dosing or pump tank, ejector or grinder pump?
Yes No

Is the pump elevated off the bottom chamber? Yes No

Does the pump work? Yes No

8. Is there a check valve, is the purge hole present? Yes No

9. Is there a high water alarm? Yes No

Does the alarm work? Yes No

10. Do electrical connections appear satisfactory? Yes No

11. Can surface water infiltrate into the tank? Yes No

12. Cleaned the pump tank. Yes No

13. Probe the drainage area to determine its location and to check for excessive moisture, odor, and/or effluent. Is there—

Any indication of a previous failure? Yes No

Seepage visible on the lawn? Yes No

Lush vegetation present? Yes No

Ponding water in the aggregate? Yes No

Even distribution of effluent within the field? Yes No

14. Distance between water well and system: _____ feet.
Does this distance meet local code requirements? Yes No

15. Explain answers as necessary

D. Sketch of System—separate sheet.

E. Checklist Summary

1. Treatment in tank is ❑ in compliance.
   ❑ not in compliance.

2. Absorption system is ❑ in compliance.
   ❑ not in compliance.

3. If a sewage pump is utilized, the pump is
   ❑ in compliance.
   ❑ not in compliance.

F. Company Disclaimer

Based on what we were able to observe and on our experience with on-site wastewater technology, we submit this Onsite Sewage Treatment System Inspection Report based on the present condition of the onsite sewage disposal system. ______________________ has not been retained to warrant, guarantee, or certify the proper functioning of the system for any period of time in the future. Because of the numerous factors (usage, soil characteristics, previous failures, etc.) which may affect the proper operation of a septic system, as well as the inability of our company to supervise or monitor the use or maintenance of the system, this report shall not be construed as a warranty by our company that the system will function properly for any particular buyer.

________________________ hereby **DISCLAIMS ANY WARRANTY,** either expressed or implied, arising from the inspection of the septic system or this report. We are also not ascertaining any affect the system is having on the groundwater.

Inspecting Company

______________________________ Phone____________________

______________________________ License No.________________

____

I have studied the information contained herein and certify that my assessment is honest, thorough, and, to the best of my ability, correct.

Name_____________________________

Title_____________________

Appendix G-6: Photographing Site Evaluation and Construction

A camera can be used as part of a site evaluator's field equipment. It is recommended that photographs be taken showing features of the lot before development. These photographs may be valuable in the future, in case there is a question about the proper siting or construction of the system.

When taking photographs try to include reference points such as fences, trees, buildings, or other landmarks that will remain for many years after construction or inspection. In addition include items to show scale in the picture such as people, cars, tape measures, feet or other items, and Flag test holes.

Notating Your Photographs

Make notes of the following:

- elevations of the outlet from the house,
- elevation going into the septic tank,
- elevation of the manhole on the septic tank,
- elevation of the D-Box,
- elevation of the trench rock cover, and
- elevations of *subsequent* drop boxes and trench rock cover. (If for some reason there is a difference in elevation, give elevations at the drop box and at the far end of the trench, to verify their similarity.)

Building Sewer

First photograph the building sewer area. This should include the placement of the building sewer, the connection to the house, the connection to the tank, and (if possible) the type of pipe used for that portion. Photograph the building sewer and tanks in the same manner as in the previous section.

Mound Site

Take pictures of the construction site as a whole. Begin by taking photos before construction begins, so that an overall view of the site will be available. Next, photograph the site after the vegetation has been cleared. Be sure to include any trees (before and after), highlighting that they were cut off and not grubbed.

Site Preparation

Your next set of photographs should depict the site preparation. These photos should include the staking, but more importantly will show the site after the ground has been turned over by back-hoeing or plowing. One of the shots of this portion of the construction should include the equipment actively engaging in work.